H-France Review

Volume 8

2008

H-France Review Vol. 8 (February 2008), No. 33

ISSN 1553-9172

H-France Review Vol. 8 (February 2008), No. 33

Maurice Crosland, *Scientific Institutions and Practice in France and Britain, c.1700-c.1870.* Aldershot, Hampshire, UK and Burlington Vt.: Ashgate Publishing Company, 2007. xvi + 270 pp. Notes, bibliography, and index. $109.95 (cl). ISBN-13:978-0-7546-5913-6.

Review by Judith P. Zinsser, University of Miami (Ohio).

Maurice Crosland is one of the most revered names in the history of eighteenth and early nineteenth-century history of science, particularly for his expertise in the history of chemistry. That he might write a comparative study of scientific institutions in France and Britain during this period is an exciting prospect. However, this is not that study. Instead, it is a compilation of articles that he has written for a variety of publishing venues, only two of which are actually comparative, with two others that are posed in a comparative framework. All twelve are available in their original place of publication. For this collection is part of the Ashgate "Variorum Collected Studies Series." Historians of science, readers of the *Notes and Records of the Royal Society*, of *History of Science*, of the *Annals of Science*, and similar journals, perhaps will already be familiar with these essays published between 1992 and 2006. For historians of France, however, interested in expanding their knowledge of science, especially chemistry, in the eighteenth and nineteenth centuries, these studies may be new and thus, a useful resource.

The collection begins with the one truly comparative essay. Selection one, "Relationships between the Royal Society and the Académie des Sciences in the late eighteenth century," after a clear description of the basic facts of the two institutions, gives illustrations of the way in which scientific networks functioned in this period. For example, the Lombardy inventor of the first primitive electric battery, Alessandro Volta, elected a foreign member of the Royal Society and recipient of its Copley medal, sent information about his experiments to his London colleagues. Cooperation on observations of the transit of Venus in 1761 provided an example of cross-Channel cooperation. The summer visit in 1787 of the Paris surgeon and Academician, Jacques René Tenon, provides another. Tenon learned much that could be used to improve French hospitals from his visit to English hospitals. This essay also notes the complications caused by the French Revolution and the Napoleonic wars in the continuation of such contacts. Essay four is more obviously comparative, contrasting the French reception of Antoine Lavoisier's work on oxygen and his influence in France with Joseph Priestley's lack of influence in England because of his association with radical politics.

The two essays which are also more general in character survey aspects of eighteenth-century chemistry in a European context: "Eighteenth-century Chemistry" and "Research schools of chemistry from Lavoisier to Wurtz." Both, however, are more descriptive than comparative or analytical. Essay ten is interesting in that it endeavors to prove that eighteenth-century chemistry not physics, should be considered "the senior science," the study responsible for creating the organization of the discipline with its characteristic laboratories, specialized equipment and training, and experimental method of knowledge acquisition and verification. Essay eleven is about "schools" in which leaders in the field, such as Lavoisier, trained others to do research. Five criteria define such a "school": a leader, research program, common workplace, access to publication, and a period of apprenticeship leading to employment (p. 336).

Of the other eight essays from the two sections, loosely defined as "Institutions" and "Practices," essays three on "The *officiers de santé* of the French Revolution," five on science in Napoleonic France, six on

"the organization of chemistry in nineteenth-century France" and seven on popular science in the Second Empire, together give something of a picture of the interplay between science and politics in France from 1789 to 1870. For example, the term "officiers de santé" reflected an effort to democratize the practice of medicine during the Revolution through the renaming of the professions of physician and surgeon. Napoleon's adoption of Pierre Simon Laplace and the physicist's own publications, such as his *Système du monde* (1796) and the *Traité de mécanique céleste* (1802), the networks he created and the protegés he supported made him *the* voice of science during the Napoleonic era. This government monopoly of science education and information falls away in the period from 1852-1870 with the emergence of science writing for the general public. For example, *La Presse* offered a once a week feature on science. The emergence of the new genre of science fiction with writers such as Jules Verne created a wide and enthusiastic audience for new and imagined discoveries and inventions.

The remaining essays describe different aspects of British science and its institutions: essay two chronicles the creation and awarding of the Royal Society's Copley medal from 1731-1839; essay eight, the beginnings of chemistry laboratories in alchemists' furnaces and experiments; essay nine, an unusual explanation for the eclipsing of the discoveries of England's Robert Boyle and Priestley by France's Lavoisier. Crosland sees the French invention of new terms to describe substances as the key factor in the long term (pp. 98-100). Essay twelve presents the fascinating story of how science became part of an otherwise religiously oriented nineteenth-century Oxford University education, with the Glastonbury monastery kitchen chosen as the architectural model for the first chemistry laboratory, a mixing of the older values and the newer studies.

Readers should know that the essays present a traditional approach to the history of science, in the style of John Heilbron, author of the now classic, *Elements of Early Modern Physics.*[1] Despite an effort at synthesis in the brief preface and connections made in individual essays to the political context, Crosland's great strength as an historian lies not in the cultural history of science but in its description in a particular time and in the creation of a continuous narrative. This suggests an underlying adherence to the once popular "whig," model of the history of "science," a surprising adherence given Crosland's interest in the role of language in two of the essays (on the *officiers de santé* and on Lavoisier's renaming of chemical substances). This older model was based on a narrow definition of the word, "science": as studies of the observed world, predicated on an experimental method, particular training, and limited means of validation for new discoveries. In this world of laboratories and university trained practitioners, it is easy to see why Crosland believes chemistry, not physics, to be its defining discipline. In this older model of the history of science, there is a presumed "progress" from Boyle to the present in the revelation of the chemistry of the known world. In addition, Crosland suggests an unspoken competition between Britain and France to be "top nation," to use an old joke among English historians, from the classic *1066 and All That.*[2]

In fact, the current history of science emphasizes the broader meanings of inquiries carried in the seventeenth and eighteenth centuries, paying close attention to the creation of "certain knowledge" in the sense of what could be verified by experiment, observation and mathematics, but physicists and chemists continued to ask broad questions of causation. Nor was the definition of "science," or more accurately "natural philosophy" (the British term) seen as a competition between disciplines. Instead, those who studied the universe assumed that they could study any and all phenomena. In addition, scientific study did not limit itself to laboratories and a few accredited individuals, institutions and publications. It was this that made possible the participation of men across classes in both countries, and of elite women. Emile Du Châtelet (1706-49) wrote on the nature of fire, the foundations of physics, and the system of the universe. She insisted on defining the metaphysical basis for science. This was not exclusively a Gallic or Continental phenomenon. Newton, whose *Principia* Du Châtelet translated into French, also sought a unified theory of the universe including God's role in its creation and continuation. The new history of science also studies those hypotheses that were not followed, an approach that Crosland investigates in his essays on Priestley, but without altering his overall

assumption of "progress" as somehow pre-determined and self-evident. Lastly, his emphasis on the chemistry model of "science" neglects the mathematical component. It was first with mathematics that the early physicists modeled the laws governing the universe. It was mathematics that verified these models through observations of the movement of the planets and their satellites. Yes, one might argue, as Crosland does so well, that "chemistry" provides our image and the practices of a particular kind of laboratory science, but such a view allows so much of the richness of new research on and analysis of the evolution of modern science, its practices and its influence, to fall away.[3]

LIST OF ESSAYS (all are by Crosland)

Institutions

I. "Relationships between the Royal Society and the Académie des Sciences in the late Eighteenth Century"

II. "The Copley Medal: The Establishment of a Reward System in the Royal Society, 1731-1839" (with Y. Bektas)

III. The *officiers de santé* of the French Revolution: A Case Study in the Changing Language of Medicine"

IV. "Lavoisier, the Two French Revolutions and 'The Imperial Despotism of Oxygen'"

V. "A Science Empire in Napoleonic France"

VI. "The Organisation of Chemistry in Nineteenth-Century France"

VII. "Popular Science and the Arts: Challenges to Cultural Authority in France under the Second Empire"

Practice

VIII. "Early Laboratories c. 1600-c.1800 and the Location of Experimental Science"

IX. "'Slippery substances': Some Practical and Conceptual Problems in the Understanding of Gases in the pre-Lavoisier era"

X. "Eighteenth-Century Chemistry"

XI. "Research Schools of Chemistry from Lavoisier to Wurtz"

XII. "Difficult Beginnings in Experimental Science at Oxford: The Gothic Chemistry Laboratory"

ENDNOTES

[1] J. L. Heilbron, *Elements of Early Modern Physics* (Berkeley: University of California Press, 1982).

[2] W. C. Sellar, *1066 and All That* (New York: E.P. Dutton, 1953).

[3] Those interested in the newer approaches to the history of science might begin with: *The Scientific*

Revolution in National Context, ed. Roy Porter and Mikuláš Teich (New York: Cambridge University Press, 1992); *The Sciences in Enlightened Europe*, ed. William Clark, Jan Golinski, and Simon Schaffer (Chicago, Ill.: University of Chicago Press, 1999); and *Men, Women, and the Birthing of Modern Science*, ed. Judith P. Zinsser (DeKalb: University of Northern Illinois University Press, 2005).

Judith P. Zinsser
University of Miami (Ohio)
zinssejp@muohio.edu